

How Changes in Assumptions Can Affect Budget Projections

The federal budget is highly sensitive to economic conditions. Revenues depend on taxable income—including wages and salaries, interest and other nonwage income, and corporate profits—which generally moves in step with overall economic activity. The benefits of many entitlement programs are pegged to inflation either directly (like Social Security) or indirectly (like Medicaid). And the Treasury regularly refinances portions of the government's debt at market interest rates.

To illustrate how assumptions about key economic factors can affect federal budget projections, the Congressional Budget Office (CBO) uses what it terms rules of thumb. Those rules are rough orders of magnitude for gauging how changes in individual economic variables, taken in isolation, will affect the budget's totals.

The variables that figure in this illustration are real (inflation-adjusted) growth, inflation, and interest rates. For real growth, CBO's rule shows the effects of a rate that is 0.1 percentage point lower each year, beginning in January 2001, than the rate of growth used in CBO's baseline (outlined in Chapter 2). The rules for inflation and interest rates assume an increase of 1 percentage point over the rates in the baseline, also starting in January 2001. Each rule is roughly symmetrical. Thus, the effects of higher growth, lower inflation, or lower interest rates would have about the same magnitude as the effects shown in this appendix but with the opposite sign.

The calculations that appear here are merely illustrative of the impact that changes in assumptions

can have. CBO uses variations of 0.1 percentage point or 1 percentage point for the sake of simplicity; those variations should not be viewed as typical forecasting errors. (For details about the accuracy of CBO's past budget projections, see Chapter 5.) Moreover, readers should be careful about extrapolating from small, incremental rule-of-thumb calculations to much larger changes, because the magnitude of the effect of a larger change is not necessarily a multiple of a smaller change. Furthermore, budget projections are subject to other kinds of errors that are not directly related to economic forecasting.

This year, in addition to the rules of thumb related to economic projections, CBO presents two new rules that affect the levels of projected surpluses. The first illustrates the impact on projections of discretionary spending of budget authority that is \$10 billion greater in 2002 than in CBO's estimate. The second shows the effect on net interest payments of surpluses that deviate from those projected in the baseline.

Lower Real Growth

Strong economic growth improves the federal budget's bottom line, and weak economic growth worsens it. The first economic rule of thumb outlines the budgetary impact of economic growth that is slightly weaker than CBO's baseline assumes. Specifically, the rule illustrates the effects of growth rates for real gross domestic product (GDP) that are lower by 0.1

percentage point every year from January 2001 through 2011.

Those effects differ from the effects of a cyclical change, such as a recession, because of a difference in duration. This rule constitutes a decline in growth that is permanent rather than temporary, such as a drop associated with cyclical changes. (For the effects of a recession on 10-year budget projections, see Chapter 5.) Moreover, CBO's rule for GDP uses 0.1 percentage point—rather than the full percentage point used in the inflation and interest rate rules—because projected real growth is unlikely to differ from actual growth by such a large amount over the next 10 years. A difference as large as 1 percentage point might occur for a few years, however, as a result of a cyclical change.

The baseline projects that real GDP grows by an average of 3.0 percent a year through 2011 (see Chapter 2). Subtracting 0.1 percentage point each year from that rate means that the level of GDP would lie roughly 1 percent below CBO's baseline by 2011.

A lower rate of growth for GDP would have a number of budgetary implications. For example, it would suggest lower growth of taxable income, leading to losses in revenues that would mount from \$1 billion in 2001 to \$40 billion in 2011 (see Table B-1). Cumulatively, revenue losses would total \$197 billion over the 2002-2011 period. Lower growth would also mean that the government borrowed more and incurred greater interest costs. Debt service would be minimally affected during the first few years of the period, but in later years, those costs would gradually rise, reaching \$14 billion in 2011. (The rule of thumb makes no assumptions about effects on unemployment.) Altogether, these changes (along with small effects on the earned income tax credit and Medicare) would reduce the projected surplus for 2011 by \$54 billion. The cumulative surplus would decline by \$245 billion over the 10-year period.

Higher Interest Rates

The second rule of thumb illustrates the sensitivity of the budget to changes in interest rates, which affect the flow of interest to and from the federal government. If interest rates were higher than CBO's baseline assumes over the 2001-2011 period, outlays would be greater in the near term because of higher costs for interest on debt held by the public. Toward the end of that period, however, the balance of uncommitted funds assumed in CBO's baseline would earn higher returns and more than offset the increased interest paid on the remaining debt. (Uncommitted funds, as discussed in Chapter 1, are residual surpluses above the amounts used to pay off debt.)

When the budget is in surplus, the Treasury uses a portion of those funds to reduce debt held by the public, but it also refinances some debt at market interest rates. Currently, the bulk of marketable federal debt (debt that is freely traded in financial markets) consists of medium- and long-term securities that were issued with initial maturities of two to 30 years. If interest rates for all maturities were 1 percentage point higher than in the baseline in each year of the 2001-2011 period (and all other economic variables were unchanged), the government's interest costs would increase by \$6 billion in 2001. That initial boost would be fueled by the extra costs of refinancing the government's short-term Treasury bills, which make up about one-fifth of all marketable debt. Those costs rise to about \$10 billion in each of the following three years.

However, the effects of higher interest rates would begin to wane after 2003, for two reasons. First, baseline surpluses are projected to continue rising through 2011, allowing securities to be redeemed and causing debt held by the public to decline. That reduced stock of debt would be less sensitive to changes in interest rates. Second, CBO assumes that the federal government will invest its un-

Table B-1.
Estimated Effects on CBO's Budget Projections of Selected Economic Changes
(By fiscal year, in billions of dollars)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Growth Rate of Real GDP Is 0.1 Percentage Point Lower per Year											
Change in Revenues	-1	-3	-6	-9	-13	-16	-20	-25	-29	-35	-40
Change in Outlays											
Net interest (Debt service)	*	*	*	1	2	3	4	6	8	11	14
Mandatory spending	*	*	*	*	*	*	*	*	*	*	*
Total	*	*	*	1	2	3	4	6	8	11	14
Change in the Surplus	-1	-4	-7	-10	-14	-19	-24	-30	-37	-45	-54
Interest Rates Are 1 Percentage Point Higher per Year											
Change in Revenues	0	0	0	0	0	0	0	0	0	0	0
Change in Outlays (Net interest and proceeds from uncommitted funds) ^a											
Higher rates	6	10	11	10	8	5	*	-5	-10	-17	-25
Debt service	*	1	1	2	3	4	4	4	4	3	2
Total	6	11	13	12	11	8	5	*	-6	-14	-23
Change in the Surplus	-6	-11	-13	-12	-11	-8	-5	*	6	14	23
Inflation Is 1 Percentage Point Higher per Year											
Change in Revenues	12	36	61	89	120	154	192	234	281	333	391
Change in Outlays											
Net interest and proceeds from uncommitted funds ^a											
Higher rates	7	12	13	12	10	7	3	-2	-8	-15	-23
Debt service	*	*	-1	-2	-4	-7	-11	-17	-25	-35	-47
Discretionary spending	*	4	10	16	23	31	40	48	58	68	78
Mandatory spending	5	13	24	37	50	64	80	98	117	138	161
Total	12	29	46	63	80	96	111	127	142	156	168
Change in the Surplus	*	7	15	26	40	58	80	107	139	177	222

SOURCE: Congressional Budget Office.

NOTE: * = between -\$500 million and \$500 million.

a. "Uncommitted funds" is CBO's term for the surpluses remaining in each year after paying down publicly held debt available for redemption.

committed funds, which begin to appear in 2006. Under this rule, proceeds from those investments would be greater in CBO's baseline if interest rates were 1 percentage point higher. By 2011, the effect of higher interest rates on those proceeds would outstrip their effect on the remaining publicly held debt, thereby increasing the total surplus by \$23 billion in that year.

Higher Inflation

The third rule of thumb shows the budgetary impact of inflation that is 1 percentage point higher than the baseline projects. The effects of inflation on federal revenues and outlays partly offset each other. On the one hand, if no other economic variables are affected, higher inflation will lead to a boost in taxable income and, hence, greater revenues. On the other hand, it will also increase spending for many benefit programs (although with a lag).

Specifically, an increase of 1 percentage point per year in projected inflation from 2001 through 2011 would increase revenues by \$391 billion and outlays by \$168 billion in 2011. The combined effect of those changes would increase the projected surplus in that year by \$222 billion.

Higher Discretionary Budget Authority

Baseline projections of discretionary spending are not directly related to economic conditions. Such projections are constructed following the rules set forth in the Balanced Budget and Emergency Deficit Control Act of 1985, as amended, which essentially dictates that CBO (and the Office of Management and Budget) assume that appropriations for the current year—in this case, 2001—grow at the specified rates of inflation in the years that follow.

Nevertheless, it may be useful to estimate the sensitivity of discretionary outlays (and thus the surplus) to changes in discretionary budget authority that are unrelated to changes in economic assumptions. Under baseline rules, providing \$10 billion more in budget authority in 2002 would lead to an increase in budget authority of \$13 billion in 2011 (see Table B-2).

Budget authority is the legal authority to incur financial obligations that will result in immediate or future outlays of federal government funds. The Congress grants budget authority for discretionary programs annually; outlays from that authority may occur in the year that the authority is granted, or they may occur in future years. Fast-spending activities (such as meeting payrolls or directly providing services) generally expend most of their budget au-

Table B-2.
Estimated Effects on CBO's Baseline of Increasing Discretionary Budget Authority by \$10 Billion in 2002
(By fiscal year, in billions of dollars)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Budget Authority	10	10	11	11	11	11	12	12	12	13
Outlays	6	9	10	10	11	11	11	12	12	12

SOURCE: Congressional Budget Office.

NOTE: CBO assumes that budget authority grows at the rates of inflation specified in the Deficit Control Act (using the GDP deflator and employment cost index for wages and salaries).

Table B-3.
Estimated Savings in Net Interest from Increasing the Surplus by \$10 Billion
(By fiscal year, in billions of dollars)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Savings from Adding \$10 Billion to the Surplus in 2001 Only	-0.2	-0.5	-0.6	-0.6	-0.6	-0.7	-0.7	-0.8	-0.8	-0.9	-0.9
Savings from Adding \$10 Billion to the Surplus Each Year	-0.2	-0.8	-1.3	-2.0	-2.6	-3.3	-4.1	-4.9	-5.7	-6.6	-7.5

SOURCE: Congressional Budget Office.

thority in the year that it is granted; slow-spending activities (such as procuring weapons or building roads and other infrastructure) spend their authority over a longer period.

As a result, changes in budget authority do not immediately translate into equal changes in outlays. CBO estimates that, on average, approximately 60 percent of budget authority for discretionary spending is spent in the year in which it is granted. Therefore, an additional \$10 billion in budget authority in 2002 would lead to \$6 billion more in outlays that year. The remaining \$4 billion would be spent over the following few years. Overall, applying this rule of thumb to the 2002-2011 period would lead to \$105 billion in additional baseline outlays.

Increase in the Surplus

CBO's projections of net interest are consistent with its projections of future interest rates and debt held by the public. Changes from year to year in debt held by the public in turn depend mostly on the size of the

surplus. If surpluses turned out to be different from those projected in the baseline—for whatever reason—interest costs would also change. (The converse of that relationship also applies to the balance of uncommitted funds from 2006 through 2011. Additional surpluses in those years would increase projections of those funds rather than decrease debt.)

An increase of \$10 billion in the surplus would affect CBO's projections of net interest from 2001 through 2011 in two ways (see Table B-3). A one-time increase of \$10 billion in 2001 would enable the Treasury to redeem an additional \$10 billion in debt in that year, compared with the assumption in CBO's baseline. Removing that debt from the outstanding stock would save \$0.2 billion in net interest costs in 2001 and nearly \$1 billion a year by 2011. (Savings in later years stem from the compounding effect of debt reduction in 2001.)

Interest savings would be even greater if the \$10 billion increase in the surplus was sustained in every year through 2011. In that case, savings from additional debt reduction (or increases in uncommitted funds) and the compounding effect of such savings would increase the surplus in 2011 by \$7.5 billion.